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CONTINGENT BELIEFS AS PREDICTORS OF WITHIN-PERSON VARIATION IN CONSCIENTIOUSNESS AT WORK

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INTRODUCTION

Much progress has been made in the study of personality at work over the past 20 years, a development that can be largely attributed to the conceptualization of personality in terms of the Five-Factor Model (FFM; McCrae & Costa, 1999). Research within the FFM framework has provided insights into the relationships between the five personality factors and important organizational outcomes such as job performance (e.g., Barrick & Mount, 1991), job satisfaction (e.g., Judge, Heller, & Mount, 2002), and leadership (e.g., Judge, Bono, Ilies, & Gerhardt, 2002), as well as the moderating effects of situational factors and the mediating effects of cognitive and motivational variables on such relationships (see Barrick, Mitchell, & Stewart, 2003). Nevertheless, as a consequence of the predominant conceptualization of the five factors as cross-situationally consistent attributes (e.g., McCrae & Costa, 1999), to date research on personality at work has largely focused on the *stable* aspects of personality, on *between-person designs*, and on *traits* as the units for assessing personality. Far fewer studies have used *within-person designs* to examine *variability* in personality-relevant states, or to evaluate the viability of incorporating *contingent units* of personality into the study of organizational behavior. Contingent units capture information about how individuals respond to changing situations, and therefore provide insight into the dynamic aspects of an individual's personality.

In contrast, research within the general personality literature has increasingly begun to focus on within-person variability and on contingent units as the basis for personality variables (e.g., Fleeson, 2007; Fournier, Moskowitz, & Zuroff, 2008). This approach largely emanates from the Cognitive-Affective Personality System (CAPS; Mischel & Shoda, 1995) model in which within-person variability is a function of situation-response contingency beliefs of the form, "if this situation, then that response". Accordingly, this approach makes use of experience sampling methodology (Beal & Weiss, 2003) to assess the variability of the individual's responses across different situations and the situational cues that trigger within-person changes. The groundwork for the CAPS approach to personality comes from research conducted by Walter Mischel and colleagues (e.g., Mischel & Peake, 1982; Shoda, Mischel, & Wright, 1994; Wright & Mischel, 1987). Mischel and Shoda (1995, 1998) summarize empirical evidence that demonstrates individuals display large amounts of behavioral variability across situations and that this variability is an expression of a stable underlying personality system, which they conceptualize in terms of a set of mediating processes whose interactions result in predictable situation-behavior relations.

The contingent “if this, then that” beliefs that Mischel and Shoda (1995) hypothesized lead to the stable within-person aspects of personality are the same type of beliefs that cognitive psychologists have proposed as procedural knowledge that underpins all forms of human behavior (Anderson, 1983) and that have been employed as explanatory mechanisms for expertise (Ericsson & Charness, 1994), automatic processing (Bargh & Gollwitzer, 1994) and other forms of procedural knowledge, such as national culture (Markus & Kitayama, 1991; Peterson & Wood, 2008). Procedural knowledge typically exerts a direct influence on emotional and behavioural responses without recourse to any conscious processing (Bargh & Gollwitzer, 1994; Anderson, 1983). Of course, such beliefs may also be held in the form of declarative knowledge and available for conscious recall and oral expression, which would be considered self-insight in relation to the contingent beliefs that constitute the dynamic personality units.

WITHIN-PERSON CONTINGENCIES OF STATE CONSCIENTIOUSNESS

Although the CAPS model provides a broad meta-theoretical framework for studying within-person aspects of personality, it does not specify the content of personality to be studied (Shoda & Mischel, 2006). In the present research we specifically focus on within-person contingencies related to state conscientiousness, with the purpose of investigating the extent and nature of such contingencies at work. The choice of conscientiousness states as the content of interest is motivated by the relevance of conscientiousness within work settings. At the trait level conscientiousness is the strongest personality predictor of job performance (e.g., Barrick, Mount, & Judge, 2001; Hurtz & Donovan, 1999; Salgado, 1997). Many of the facets that characterize conscientiousness tap into behaviors that on face value are highly adaptive for performance at work (e.g., competence, orderliness, achievement-orientation and self-discipline; see Costa & McCrae, 1992). In its broadest sense, conscientiousness encompasses variables that include a wide range of motivational tendencies (see Roberts, Chernyshenko, Stark, & Goldberg, 2005), including behavioral responses traditionally included in definitions of work motivation (e.g., Seo, Barrett, & Bartunek, 2004).

Previous findings within the general personality literature support optimism about the use of state conscientiousness as the basis for contingent personality units. Research conducted with university students demonstrates that variability in the level of conscientiousness within a given individual is substantial, even over relatively short periods of time. For example, the results of Fleeson’s (2007) experience sampling studies (in which conscientiousness levels were sampled multiple times each day over several weeks) suggest that over 80% of variability in conscientiousness occurs within a person (compared to less than 20% between-person variability). Moreover, within-person variability in conscientiousness is largely a function of variability in the situational cues encountered by people (Fleeson, 2007), which in turn suggests that the variability represents meaningful responding to changes in situations, and is not purely the result of random fluctuations.

The present study specifically investigates within-person variability in state conscientiousness in the workplace. We use experience sampling methodology to estimate the extent to which the typical individual varies in their conscientiousness across the work day, the contingency of this variability on changes in a set of work-related situational cues, and individual differences in such effects that may subsequently form the basis of contingent units of personality. In our study we focus on the *task* at hand as the source of the situational cues, as there is good reason for expecting task characteristics to be a relevant source of situational

variability for conscientious behaviors. The conscientiousness factor has been explicitly defined in terms of its task facilitation properties (e.g., John & Srivastava, 1999), and inventories designed to operationalize the FFM consistently identify conscientiousness as directly relevant to the way in which individuals approach and complete tasks (e.g., Costa & McCrae, 1992; Pryor & Taylor, 2000). In particular, we focus on three psychological dimensions of tasks that are likely to exert a strong influence on the functionality of conscientious responses, namely *task importance*, *task difficulty*, and *task urgency*. Importance, difficulty and time frame have been identified as three fundamental dimensions of the goals that people pursue (Austin & Vancouver, 1996). Tasks that are perceived as higher in importance have outcomes that are more attractive (either because they involve the achievement of positive outcomes or the avoidance of aversive ones) and therefore justify greater levels of conscientious behavior than less important tasks. In contrast, task difficulty influences conscientious behavior through the demands that tasks make on an individual's resources. As task difficulty increases, individuals are prompted to allocate more of their psychological resources to the task in order to cope with the increased workload (Capa, Audiffren & Ragot, 2008). Finally, task urgency will also plausibly increase conscientiousness-related behaviors through its effect on task demands, although this effect is likely to occur at least partly independently of task difficulty. This is because urgent tasks make demands on the person that are not required by difficult but non-urgent tasks, such as the immediacy of the individual's actions.

However, we also expect significant individual differences in the extent to which conscientiousness is contingent on task characteristics. Our expectation follows from the CAPS model, which conceptualizes between-person differences in contingencies as the result of stable individual differences in information processing. Because people have different predispositions and different developmental histories they develop different procedural knowledge bases for similar situations, which leads to individual differences in the encoding and responding to the same objective situation. Specifically, within CAPS, individuals are assumed to differ with respect to the accessibility of different cognitive and affective units and in the organization of the relationships between the units (Mischel & Shoda, 1995). The distinctive accessibility and organization of units within each person interacts with the relevant psychological features of situations, the results of which manifest as situation-response contingencies that are stable within a person but that differ between people. Some of the mediating units that may be relevant to task characteristic-state conscientiousness contingencies include expectancies (e.g., about the usefulness of behaving conscientiously in the face of increasing task difficulty), values (e.g., in relation to the timely completion of tasks), and competencies (e.g., in relation to the ability to sustain high levels of focus and efficiency). For example, for one individual, increasing task difficulty may activate beliefs about their lack of ability and thoughts of failure, which in turn results in higher anxiety, the goal of avoiding looking foolish, and withdrawal from the task; for another individual, increasing task difficulty may be framed in terms of an opportunity to develop one's skills, which in turn evokes enthusiasm and greater levels of effort and task focus. Accordingly, the mediating processes of the latter person generate a task difficulty-conscientiousness contingency that is steeper (more positive) than that of the former person.

METHODS

Participants and Procedure

The participants were 111 managers (57% male, mean age = 32.5) from three large companies (an airline, an insurance company, and a packaging company). Each manager was provided with a handheld computer that they carried with them over a three-week period at work. The devices' alarms would randomly ring five times each workday between the times of 9am and 7pm (with the constraint that the signals were no less than one hour apart and no more than three hours apart) to indicate to the participants that it was time to complete an experience sampling questionnaire. The participants were informed that they had a 30-minute response window in which to respond to each signal, and that if they were unable to do so within this time period that they should wait for the next signal. In total, 4,345 signals were responded to, corresponding to an average of 39 responses per person (response rate = 52%). Sixty-nine of the responses were subsequently omitted due to missing data, resulting in a final total of 4,276 responses.

Experience Sampling Questionnaire

The experience sampling questionnaire consisted of four items that assessed the participant's state conscientiousness and three items that assessed the perceived task characteristics (task importance, task difficulty and task urgency), as well as a series of other items that were not part of the present study. The questionnaire directed individuals to think of the task they were currently engaged in and to respond to each item with that task in mind. The state conscientiousness items assessed the individual's level of task efficiency ("How efficiently are you working on this task"), task systematicity ("How systematically are you approaching this task"), task effort ("How hard are you working on this task") and task focus (How focussed are you on this task"). The task characteristics assessed task importance ("How important is it that you complete this task effectively"), task difficulty ("How difficult is this task for you") and task urgency ("How much time pressure are you experiencing while performing this task"). Each item was responded to on a seven-point scale from "Not at all" or "None at all" (scored as 0) to "Extremely" or "A lot" (scored as 6).

Data Analysis

We conducted a series of three-level hierarchical linear modeling analyses in which the latent state conscientiousness construct was modelled at level one (the measurement model), within-person contingencies were modelled at level two, and individual differences in the contingencies were modelled at level three (see Raudenbush & Bryk, 2002). All analyses were conducted using the HLM software package (Raudenbush, Bryk, Cheong, Congdon, 2000) and followed the hypothesis testing procedures of Raudenbush and Bryk (2002).

RESULTS

First we conducted a fully unconditional analysis which partitioned the variability in the state conscientiousness items into between-person ($\sigma = 0.33$), within-person ($\sigma = 0.67$) and error ($\sigma = 1.18$) components. Between-person variability was significantly different from zero ($\chi^2 = 1665$, d.f. = 110, $p < .01$), which indicates that individuals differ from each other in how conscientiously they typically behave at work. However, within-person variability was also statistically significant ($\chi^2 = 13591$, d.f. = 4149, $p < .01$), indicating that individuals vary in how

conscientiously they behave from occasion to occasion at work. Moreover, within-person variability in the latent state conscientiousness construct accounted for approximately twice as much of the total latent construct variability (67%) than did between-person variability in the latent construct (33%).

Second, we conducted a random coefficient regression analyses in which we introduced the task characteristic variables at level two in order to examine the within-person relationships between task characteristics and state conscientiousness. The task characteristic items were entered simultaneously (to control for the other task characteristics). All three task characteristics were significantly and positively related to state conscientiousness (task importance: $\beta = 0.37$, $t = 23.87$, $p < .01$; task difficulty: $\beta = 0.08$, $t = 6.93$, $p < .01$; task urgency: $\beta = 0.07$, $t = 6.79$, $p < .01$), indicating that each characteristic is related to state conscientiousness independently of the other two. The combined additive effect of all three task characteristics accounted for 63% of the within-person variance in state conscientiousness. Taken together, these findings support the contingency of state conscientiousness on task characteristics: For the typical individual, state conscientiousness increases when tasks are perceived as more important, more difficult or more urgent, and decreases when tasks are perceived as less important, less difficult or less urgent.

In the above analyses, the level two intercepts and slopes were allowed to vary randomly at level three, which in turn allowed us to examine between-person differences in the within-person contingencies. Between-person differences in the slopes was statistically significant for all three task characteristics (task importance: $\chi^2 = 219.49$, $p < .01$; task difficulty: $\chi^2 = 152.21$, $p < .01$; task urgency: $\chi^2 = 178.05$, $p < .01$). To clarify the nature of the between-person differences, we estimated the plausible range of slopes for each task characteristic as those that fall within 95% of the typical slope (i.e., ± 1.96 standard deviations). For task importance, the slopes range from .15 to .59, indicating that within-person increases in task importance are positively associated with increases in state conscientiousness across the entire range of plausible slopes. However, individuals do differ markedly in the magnitude of their within-person contingencies, in that individuals at the upper end of the range are almost four times more responsive to increasing task importance as those at the lower end. For task difficulty (range = -.04 to .19) and task urgency (range = -.06 to .20), the lower ends of the ranges encompass negative slopes. Consequently, although increases in task difficulty and task urgency are associated with higher state conscientiousness for the majority of individuals, a subset of individuals are either unresponsive to increases in these characteristics or else respond by (slightly) decreasing state conscientiousness.

To assess the stability of the within-person contingencies, we reconducted the analyses separately for the first half and second half of each participant's data. The empirical bayes estimates of the within-person slopes for the two sets of analyses were correlated to obtain stability coefficients. The stability coefficients were all positive and statistically significant (importance: $r = .34$, $p < .01$; difficulty: $r = .30$, $p < .01$; urgency: $r = .48$, $p < .01$), indicating that individuals who have stronger contingencies based on the first period also tend to have stronger contingencies for the second period. These results provide evidence that between-person differences in contingencies reflect characteristic ways that individuals respond to situations.

DISCUSSION

The present research examined the viability of incorporating within-person contingencies into the study of personality at work, using state conscientiousness as an illustrative example. By

replicating the large within-person variability in conscientiousness that has previously been observed among undergraduate students (e.g., Fleeson, 2007), the results satisfy a necessary precondition for studying within-person contingencies. Moreover, we found that within-person variability in state conscientiousness at work is meaningful in the sense that it is largely contingent on characteristics of the tasks individuals are engaged in; and that there are significant and stable differences between individuals in the magnitude of their contingencies.

Our results have bearing on research that attempts to account for behavior at work as a function of personality. To date the majority of studies have focused on accounting for between-person differences in important work outcomes as a function of between-person differences in traits. However, the large amount of within-person variability in conscientiousness that was observed in the present study highlights a constraint on the power of traits to account for variability in conscientious behavior. Trait units are constant within the person; they describe between-person differences in tendencies to behave in a particular way, however by themselves they do not account for variability in behavior within a given person (Fleeson, 2001). Similarly, situational variables that are constant within a person (e.g., job autonomy) do not account for within-person variability in behavior. Rather, an integrative approach is required that incorporates dynamic constructs such as momentary cognitions, emotions and behaviors and shifting situational variables into the study of personality at work. In this way, one can account for both the between- and within-person variability in behavior that occurs in organizations.

Why do individuals differ in the magnitude of their task characteristic-conscientiousness contingencies, and how can individual differences in contingencies contribute to the study of personality in organizations? One possibility is that the contingencies represent adaptive responding to changing contexts. That is, the strong main effects of task characteristics on state conscientiousness may reflect the general adaptive value of behaving more conscientiously on tasks that are considered more important, difficult or urgent; and, individual differences in these contingencies may reflect differences in the adaptive value of increasing conscientious behaviors in response to increasing task importance, difficulty or urgency. Such differences would arise as a result of the different learning histories and past experiences of people in similar contexts. To this effect, within-person contingencies may capture individual differences that are not easily assessed by traditional trait measures but that are relevant for predicting work performance. For example, current personality-based measures of adaptability rely on self-report items that can be transparent (e.g., "Adapt easily to new situations", 6FPG Adaptability scale, Goldberg, 1999), and that have been shown to be prone to problems associated with faking good in applied settings (see Griffin, 2003). Contingent units that are operationalized as regression slopes are presumably less transparent, and therefore less susceptible to faking, potentially provide a less distorted measure of the construct of interest. Moreover, contingencies direct the focus of personality research to aspects of the person that are more amenable to change than trait units and that have often been the focus of clinical interventions, such as cognitive appraisals, emotional reactions, and self-regulatory skills. Consequently, such units are likely to lend themselves to applications that focus on behavioral change and personal development in organizational settings. A direction for future research will be to further clarify the nature of individual differences in within-person contingencies, including their antecedents and consequences in work settings.

REFERENCES AVAILABLE FROM THE AUTHORS